

Peter Schwendeman

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EDUCATION

University of Michigan, College of Engineering

Major: Computer Science, Minor: Math and Physics (GPA: 4.0/4.0)

Ann Arbor, Michigan

Aug 2023 - Expected May 2026

Relevant Coursework: Machine Learning, Linear Algebra, Abstract Algebra, Data Structures and Algorithms, Thermodynamics, Optics, Lagrangian/Hamiltonian Mechanics, General Relativity (Fall 25), Complexity Theory (Fall 25), Cryptography (Fall 25)

Awards: William J. Branstrom Freshmen Prize, Dean's List, Ginns International Scholarship, J. Sun and J. Wu Scholarship

Shanghai Jiao Tong University

Summer Exchange Student — Physics and Computer Science

Shanghai, China

May 2024 - August 2024

Relevant Coursework: Quantum Computing, Quantum Mechanics, Probability and Statistics

PUBLICATIONS

1. Glaser J., **Schwendeman P.S.**, Anderson J.A., Glotzer S.C. Unified memory in HOOMD-blue improves node-level strong scaling, *Computational Materials Science*, 173 (2020). doi.org/10.1016/j.commatsci.2019.109359
2. Deng K., **Schwendeman P.S.**, Guan Y. Predicting single neuron responses of the primary visual cortex with deep learning model. *Advanced Science*, 11 (2024). doi.org/10.1002/adv.202305626
3. Liang D., Walker J., **Schwendeman P.S.**, Chandrashekar A., Ackermann R., Olsen K.F., Beck-Broichsitter M., Schwendeman S.P.. Effect of PLGA raw materials on in vitro and in vivo performance of drug-loaded microspheres. *Drug Delivery and Translational Research* (2024). doi.org/10.1007/s13346-024-01577-y
4. Deng K.*, **Schwendeman P.S.***, Guan Y. Learnable Diffusion Framework for Mouse V1 Neural Decoding. Under revision at *Advanced Science*.
5. Xu J.*, Sun Q.*, **Schwendeman P.**, Nielsen S. Cetin E., Tang Y. [TITLE REDACTED]. In anonymous review at the *International Conference on Learning Representations (2026)*.
6. Nielsan S.*, Cetin E.* **Schwendeman P.***, Sun Q. Xu J., Tang Y. [TITLE REDACTED]. In anonymous review at the *International Conference on Learning Representations (2026)*.

EXPERIENCE

Michigan Medicine — Computational Medicine and Bioinformatics

Undergraduate Researcher — Advised by Dr. Yuanfang Guan

Ann Arbor, Michigan

May 2023 - Current

- Created CNN-based model with PyTorch to predict neuron responses of mice to ImageNet images, outperforming existing models by 15-30% in cross-subject inference on different metrics. Published work in *Advanced Science*².
- Designed latent-diffusion model with transformer backbone to reconstruct images from neuronal responses. Generated 80,000 synthetic image-response pairs and trained on a 95%-5% synthetic-real split, achieving state-of-the-art correlation and generation quality. Manuscript in submission at *Advanced Science*⁴.
- Analyzed alignment between mouse neural activity and vision model embeddings using optimal transport and manifold learning (Gromov–Wasserstein, Isomap, UMAP).

Sakana AI

Research Scientist Intern — Advised by Dr. Yujin Tang

Tokyo, Japan

May 2025 - September 2025

- Developed reinforcement learning and evolution-based methods for coordinating collective intelligence among LLM agents, achieving state-of-the-art (SOTA) results on reasoning benchmarks (e.g., LiveCodeBench).
- Co-first-authored one of two *ICLR* submissions on this work (**details under NDA**).

Deque Systems, Inc.

Software Development Intern — Core API Team

Remote

Jun 2022 - Sep 2023

- Contributed to 6 web accessibility testing tools, including axe-core (1B+ downloads), using Python, JavaScript, TypeScript, and C# to help frontend developers build accessible websites.
- Extended functionality of Deque's accessibility linter from VS Code to Sublime Text (in Python) and JetBrains IDEs (in Scala), expanding the product's user base. Demoed projects to company leadership.

University of Michigan — Department of Chemical Engineering

Research Assistant — Advised by Dr. Sharon Glotzer, Dr. Jens Glaser, Dr. Timothy Moore

Ann Arbor, Michigan

Oct 2017 - May 2023

- Utilized CUDA unified memory between GPUs to improve performance of molecular dynamics simulation of crystallization, enabling faster large scale physical simulations. Published in *Computational Materials Science*¹.
- Updated C++ backend of Particle Simulation tool *HOOMD-blue* (1M+ downloads) to use *Heterogeneous-Compute Interface for Portability* (HIP) instead of CUDA, enabling multi-GPU tasks on both Nvidia and AMD GPUs.
- Investigated how patchy triangular nanoparticles self-assemble into host-guest structures, an experimental system for selective encapsulation. Developed Python algorithms to analyze these structures in simulation data ([link](#)).

PROJECTS

- **Poker AI** ([link](#))
Trained an AI agent to play a Poker variant at no cost using deep reinforcement learning (RL) and free Kaggle GPU hours. Achieved near SOTA performance for deep RL methods (exploitability of 50 milli-big blinds per game).
- **SugarSense** ([link](#))
Extracted important features from blood glucose data of sandbox diabetes patients with Dexcom API. Used State Space Model (SSM) to predict next two hours of blood sugars, achieving 0.95 test correlation for seen patients.

TEACHING EXPERIENCE

EECS 445: Introduction to Machine Learning

Instructional Aide

University of Michigan

January 2025 - Current

- Developed homework, projects, and exams for 300+ students. Taught recitations of up to 60 students and provided support through office hours and online forums.

SKILLS

- **Programming Languages:** C, C++, C#, Python, Java, JavaScript, TypeScript, SQL, Scala, HTML, CSS, Bash, Perl
- **Frameworks:** PyTorch, TensorFlow, Keras, Numpy, Pandas, Scikit-learn, Matplotlib, CUDA, Django, NodeJS, React
- **Tools:** Unity, Godot, Docker, GIT, PostgreSQL, MySQL, SQLite
- **Machine Learning:** Transformers, Diffusion Models, CNNs, RNNs, VAEs, SSMs, Reinforcement Learning

ADDITIONAL

- Violinist in the Michigan Pops Orchestra. Two time counselor for Interlochen orchestra camp. MSBOA honors soloist.
- Raised \$2,500 from 27 donors for the Juvenile Diabetes Research Foundation. Edited diabetes educational materials.
- Limited conversational language proficiency in Chinese and Japanese.
- Interests: Go, badminton, skiing, violin, making video games (like [Project Odyssey](#)), composing music